

## INFORMATION SHEET

ORDER NO. R5-2006-XXXX  
NPDES NO. CA0078921  
CITY OF ALTURAS  
WASTEWATER TREATMENT PLANT  
MODOC COUNTY

### GENERAL INFORMATION

The City of Alturas (hereafter referred to as Discharger) submitted a Report of Waste Discharge, dated 9 December 2004, and applied for permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Alturas Wastewater Treatment Plant (WWTP). The Discharger is currently regulated under Waste Discharge Requirements Order No. R5-00-123 (NPDES No. CA0078921), adopted by the Central Valley Regional Water Quality Control Board (hereafter Board) on 16 June 2000.

The City of Alturas owns and operates a wastewater collection, treatment, and disposal system, and provides sewerage service within the city limits. The treatment plant (Assessors Parcel No 022-130-11) is in Section 14, Township 42 North, Range 12 East of the Mt. Diablo Base Line and Meridian. Treated municipal wastewater is currently discharged, at Discharge Point 001, to the Pit River, a water of the United States, immediately downstream of the confluence of the North and South Forks.

The existing treatment system consists of an inlet screen, inlet Parshall flume, grit removal, comminutor, primary clarifier, aerobic sludge digester, fixed bed trickling filter, secondary clarifier, chlorine contact chamber, dechlorination, outlet Parshall flume and outfall structure.

The Discharger was issued Cease and Desist (C&D) Order No. R5-2003-0128 on 5 September 2003, which required the City of Alturas to cease and desist discharging waste in violation of Waste Discharge Requirements Order No. 5-00-123 (NPDES No. CA0078921). Specifically the Order required the City to submit a report identifying the selected alternative to either upgrading or replacing the treatment plant.

The City has been approved for Small Communities Grant funding and has submitted a plan through their engineering consultant for upgrading the plant which includes: new grinder for headworks, replacement of trickling filter media, replacement of trickling filter pumps and pump drives, addition of secondary clarifier, modification of Parshall flume, new chlorine contact chamber, new concrete sludge drying beds, upgrade of collection system pump stations, slip lining of approximately 2,400 ft of sewer line and modification of chlorination controls.

The facility is in the Pit River Hydrologic Sub Area No. 526.52, as depicted on interagency hydrologic maps prepared by the California Department of Water Resources in August 1986.

T  
E  
N  
T  
A  
T  
I  
V  
E

## **BENEFICIAL USES**

The Basin Plan in Table II-1 identifies beneficial uses for the segment of the Pit River between the confluence of the North and South Forks and the confluence with Hat Creek. The beneficial uses identified in Table II-I are as follows: Municipal and Domestic Supply (MUN); Agricultural Supply (irrigation and stock watering) (AGR); Hydropower Generation (POW); Water Contact Recreation (contact recreation and canoeing and rafting) (REC-1); Other Noncontact Recreation (esthetic enjoyment) (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Warm Water Spawning, Reproduction, and/or Early Development Habitat (SPWN); and Wildlife Habitat (WILD). The beneficial uses of groundwater in the area of the City of Alturas Wastewater Treatment Plant are municipal and domestic water supply, agricultural supply, and industrial service and process supply.

## **BASIS FOR PERMIT REQUIREMENTS**

The Discharger operates a publicly owned wastewater treatment facility, and therefore, is subject to the USEPA secondary treatment regulations at 40 CFR 133.

### **Discharge Prohibitions**

Prohibitions on bypass, nuisance, and discharges that occur in a manner different than described by the Order are retained from Order No. R5-00-123 and/or are consistent with objectives of the Basin Plan, as required by the California Water Code and the Clean Water Act (CWA), to protect the beneficial uses of waters of the State.

### **Establishment of Mass-Based Effluent Limits and Effluent Flow Limit**

This Order establishes concentration-based and mass-based effluent limits. The mass-based effluent limits are calculated using the concentration-based limits and the design maximum effluent flow rate for the facility of 0.5 mgd.

### **Dilution Considerations for Effluent Limit Calculations**

In determining whether a discharge has the reasonable potential to contribute to an in-stream excursion above a narrative or numerical water quality standard (reasonable potential analysis), the dilution of the effluent in receiving water may be considered where areas of dilution are defined. The available dilution may also be used to calculate protective effluent limitations by applying water quality criteria at the edge of the defined mixing zone. In situations where receiving water flows are substantially greater than effluent flows and there is available assimilative capacity, dilution may be considered in establishing effluent limitations. During some years there are periods of zero dilution in the Pit River at 001, primarily in the middle and late summer months. Dilution, therefore, has not been considered in the calculation of effluent limitations, and the Discharger will be required to meet effluent limitations at end of pipe. The Discharger is exploring the possibility of a land application site. If and when this occurs the Central Valley Water Board may grant a

seasonal dilution credit and a mixing zone, following independent study and demonstration by the Discharger that a dilution credit is appropriate.

### **Determination of Effluent Limits for CTR Constituents and Toxicity**

#### *Reasonable Potential Analysis*

Federal Regulations contained in 40 CFR 122.4 (d) require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. The *National Toxics Rule* NTR and *California Toxics Rule* CTR contain water quality standards applicable to this discharge. On 8 December 2000, the Discharger was issued a letter under the authority of California Water Code Section 13267 requesting effluent and receiving water monitoring to perform a reasonable potential analysis to determine if pollutants are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. The Discharger sampled the effluent at discharge point 001, and the upstream receiving water on 2 August 2001 and 4 November 2003. Analytical results were submitted for volatile substances, semi volatile substances, pesticides, metals, asbestos, 2378 TCDD, and sixteen other dioxin congeners. The methodology described in Section 1.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Policy or SIP) was used to evaluate the Discharger's monitoring data and determine reasonable potential. Copper and zinc were detected in the effluent from Discharge 001 at concentrations that may cause or contribute to an in-stream excursion above a narrative or numerical water quality standard or objectives. Additional samples of effluent and receiving water were taken during the period from 1 January 2004 to 1 June 2005 and analyzed for copper and zinc. Results confirmed that a reasonable potential existed for these two metals. Cyanide was detected in the effluent and receiving water at elevated levels, however, the accuracy of the analysis was questionable. The Central Valley Water Board finds that there is not sufficient information to determine if the discharge has a reasonable potential to cause or contribute to in-stream excursions above applicable water quality standards resulting from cyanide, and therefore, water quality based effluent limitations for cyanide are not included in this Order. This Order requires additional sampling and analysis for cyanide to determine if a reasonable potential exists. If a reasonable potential is demonstrated, this Permit will be re-opened and an effluent limit for cyanide added.

#### *Calculation of Effluent Limitations (Copper)*

Following are the steps, as presented in section 1.4.B of the SIP, to calculate the effluent limits for copper:

Step 1: Applicable water quality criterion/objective (C)

CTR criteria for copper are a function of receiving water hardness. The criterion continuous concentration (CCC) is given by the following equation:

$$\text{CCC (chronic)} = e^{(0.8545 \cdot \ln(\text{hardness}) - 1.702)} * (0.960) \text{ as dissolved fraction}$$

Using the minimum R-1 Pit River hardness value for the past three years of 64 mg/L gives the following chronic criterion value:

$$CCC = 6.12 \mu\text{g/L}$$

The CTR criterion maximum concentration (CMC) is given by:

$$CMC = e^{(0.9422 \cdot \ln(\text{hardness}) - 1.700)} * (0.960) \text{ as dissolved fraction}$$

$$CMC = 8.83 \mu\text{g/L}$$

Step 2: Calculate the ECA

$$ECA = \text{Effluent Concentration Allowance} = C + D \cdot (C - B)$$

Where D = dilution credit = 0 and B = background

Since D=0, ECA = C

$$ECA_{CCC} = 6.12 \mu\text{g/L}$$

$$ECA_{CMC} = 8.83 \mu\text{g/L}$$

Step 3: Determine long-term average (LTA)

$$C_V = 0.6; \text{ECA multiplier}_{\text{chronic99}} = 0.527$$

$$\text{ECA multiplier}_{\text{acute99}} = 0.321$$

$$LTA_{CCC} = 3.23 \mu\text{g/L}$$

$$LTA_{CMC} = 2.83 \mu\text{g/L}$$

Step 4: Select lowest LTA

$$LTA_{CMC} = 2.83 \mu\text{g/L}$$

Step 5: Calculate water quality based effluent limits

$$C_V = 0.6; \text{AMEL multiplier}_{95} = 1.55 \text{ (n=4 for less than 4 samples per month)}$$

$$\text{MDEL multiplier}_{99} = 3.11$$

Chronic translator: 0.960

Acute translator: 0.960

**Average Monthly Effluent Limit for Copper = 4.57  $\mu\text{g/L}$  (total recoverable)**

**Maximum Daily Effluent Limit for Copper = 9.17  $\mu\text{g/L}$  (total recoverable)**

Based on the results of effluent monitoring, the Discharger cannot currently comply with these new effluent limitations. A time schedule for compliance with these effluent limits is provided by this Order.

#### *Calculation of Effluent Limitations (Zinc)*

Following are the steps, as presented in section 1.4.B of the SIP, to calculate the effluent limits for zinc:

T  
E  
N  
T  
A  
T  
I  
V  
E

Step 1: Applicable water quality criterion/objective (C)

CTR criteria for zinc are a function of receiving water hardness. The criterion continuous concentration (CCC) is given by the following equation:

$$CCC \text{ (chronic)} = e^{(0.8473 \cdot \ln(\text{hardness}) + 0.884)} * (0.986) \text{ as dissolved fraction}$$

Using the minimum R-1 Pit River hardness value for the past three years of 64 mg/L gives the following chronic criterion value:

$$CCC = 82.09 \mu\text{g/L}$$

The CTR criterion maximum concentration (CMC) is given by:

$$CMC = e^{(0.8473 \cdot \ln(\text{hardness}) + 0.884)} * (0.978) \text{ as dissolved fraction}$$

$$CMC = 80.28 \mu\text{g/L}$$

Step 2: Calculate the ECA

$$ECA = \text{Effluent Concentration Allowance} = C + D \cdot (C - B)$$

Where D = dilution credit = 0 and B = background

$$\text{Since } D=0, ECA = C$$

$$ECA_{CCC} = 82.09 \mu\text{g/L}$$

$$ECA_{CMC} = 80.28 \mu\text{g/L}$$

Step 3: Determine long-term average (LTA)

$$C_v = 0.6; ECA \text{ multiplier}_{\text{chronic}99} = 0.527$$

$$ECA \text{ multiplier}_{\text{acute}99} = 0.321$$

$$LTA_{CCC} = 43.26 \mu\text{g/L}$$

$$LTA_{CMC} = 25.77 \mu\text{g/L}$$

Step 4: Select lowest LTA

$$LTA_{CMC} = 25.77 \mu\text{g/L}$$

Step 5: Calculate water quality based effluent limits

$$C_v = 0.6; AMEL \text{ multiplier}_{95} = 1.55 \text{ (n=4 for less than 4 samples per month)}$$

$$MDEL \text{ multiplier}_{99} = 3.11$$

$$\text{Chronic translator: } 0.986$$

$$\text{Acute translator: } 0.978$$

$$\text{Average Monthly Effluent Limit for Zinc} = 40.51 \mu\text{g/L (total recoverable)}$$

$$\text{Maximum Daily Effluent Limit for Zinc} = 81.94 \mu\text{g/L (total recoverable)}$$

T

E

N

T

A

T

I

V

E

Based on the results of effluent monitoring, the Discharger probably cannot currently comply with these new effluent limitations. A time schedule for compliance with these effluent limits is provided by this Order.

#### *Acute and Chronic Toxicity*

The Basin Plan includes a narrative water quality objective for toxicity that requires receiving waters to be free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. The Basin Plan also requires, at a minimum, 96-hour bioassays to evaluate compliance with the narrative objective, and, where appropriate, acute toxicity limitations and monitoring must be required. Section 4 of the SIP requires chronic toxicity monitoring to be conducted to demonstrate compliance with narrative toxicity objectives. This Order implements both the Basin Plan and SIP toxicity requirements.

The State has listed the Pit River on the State's 303 (d) list as impaired for nutrients, organic enrichment/low dissolved oxygen and temperature. The Central Valley Water Board has determined that the Alturas WWTP does not increase the temperature in the Pit River and is a negligible contributor of organic BOD during most of the year when there is adequate flow in the Pit River. To insure that the narrative water quality objectives for toxicity are met, this Permit includes toxicity effluent limitations and monitoring.

#### **Determination of Effluent Limits for non-CTR Constituents**

##### *Chlorine*

The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Chlorine is used for disinfection of the effluent waste stream. Chlorine can cause toxicity to aquatic organisms when discharged to surface waters. USEPA recommends, in their Ambient Water Quality Criteria for the Protection of Fresh Water Aquatic Life, that chlorine concentrations not exceed 0.02 mg/L as a 1-hour average and 0.01 mg/L as a 4 day average. The use of chlorine as a disinfectant in the wastewater treatment process presents a reasonable potential that it could be discharged in toxic concentrations. An effluent limitation for chlorine has been included in the Order to protect the receiving stream aquatic life beneficial uses. The effluent limitation has been established at the USEPA recommended ambient water quality criteria for chlorine. The one-hour average limitation, rather than an instantaneous or daily maximum, will be applied for compliance determinations. A one-hour average limitation allows for continuous monitoring anomalies while protecting aquatic organisms against toxicity.

##### *Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS) and Coliform*

The beneficial uses of the Pit River from the confluence of the forks to Hat Creek include contact and non contact recreational uses and irrigation. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The California Department of Health Services (DHS) has developed reclamation criteria,

T  
E  
N  
T  
A  
T  
I  
V  
E

California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22) for the reuse of wastewater. Title 22 does not apply directly to surface waters, however, DHS has provided guidance and recommendations for treatment and disinfection of domestic wastewater discharged to surface waters in two letters to the Central Valley Water Board dated 8 April 1999 and 1 July, 2003. When dilution of effluent in the receiving stream is less than 20:1, and the beneficial uses of the stream include contact recreation or irrigation of vegetables and fruits where the wastewater may come in contact with the vegetables and fruits, DHS recommends that the effluent be oxidized, coagulated, filtered and disinfected. It is further recommended that the effluent does not exceed an MPN of 2.2 per 100 milliliters for the last seven days for which analyses have been completed or 23 per 100 milliliters in more than one sample in any 30 day period. When dilution of effluent in the receiving stream is greater than 20:1 a secondary, 23 MPN discharge is acceptable. This Permit implements the DHS recommendations. While filtration is not required to meet the definition of disinfected secondary-2.2 recycled water, it may be necessary for the Discharger to filter effluent to meet the coliform limitations specified for this class of recycled water. The coliform limitations in the previous Permit are considerably less stringent than those recommended by DHS and therefore more stringent limits would be impossible for the Discharger to meet with the existing plant. For this reason the Discharger will be given until **15 November 2008**, one year after the required completion date for plant upgrades, to comply with the final coliform and turbidity limits in this Permit.

In accordance with 40 CFR 122.45, mass limitations for BOD and TSS, based on the facility's design flow of 0.5 mgd, are included in the permit to prevent dilution as a means of complying with concentration based effluent limitations.

#### *Settleable Solids*

The existing permit contains monthly average and daily maximum settleable solids limits of 0.1 mL/L and 0.2 mL/L, respectively. These limits have been retained in this Permit.

#### *pH*

The Basin Plan provides that the pH of surface waters shall not be depressed below 6.5 nor raised above 8.5 nor shall the discharge alter pH of the receiving water more than 0.5 units. Federal regulations at 40 CFR 133.102(c) describes the minimum level of effluent quality to be attained by secondary treatment facilities for pH to be within 6.0 and 9.0 units. This Order requires the pH of the effluent to be maintained within the limits of 6.5 and 8.5 pH units. This is consistent with the previous permit.

#### *Time Schedule*

A number of previous analytical results for effluent copper, zinc and total coliform (MPN) are greater than the effluent limits in this Permit and it is likely that the Discharger will be in violation of these limits at the time of adoption. In accordance with the SIP and the California Water Code a compliance schedule has been included in this Permit which requires the Discharger to achieve compliance with the copper and zinc limits by **18 May 2010** and compliance with the coliform and turbidity limits by **15 November 2008**. The improvements necessary for compliance with these

T  
E  
N  
T  
A  
T  
I  
V  
E

limits have been designed and will be constructed in 2007. The Discharger is required to complete the construction of these improvements by **15 November 2007**.

## MONITORING AND REPORTING

Section 308 of the CWA and USEPA regulation 40 CFR 122.44 (i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The Discharger is responsible for conducting monitoring and for reporting the results to the USEPA using Discharge Monitoring Reports. The self-monitoring program requires monitoring of receiving water, influent and effluent, storm water, and sludge.

The Monitoring and Reporting Program retains influent monitoring for BOD and suspended solids to allow determination of removal efficiencies for these wastewater characteristics through treatment steps. Receiving water sampling stations and monitoring requirements are also retained from Order No. 5-00-123, however this Order includes a requirement for sampling and analysis of the CTR pollutants in effluent and receiving water.

Effluent monitoring requirements for flow, pH, chlorine, total suspended solids, BOD<sub>5</sub>, coliform bacteria, and chronic toxicity are retained from Order No. 5-00-123. Acute and chronic toxicity testing are required to determine compliance with receiving water narrative objective for toxicity. Monitoring for CTR pollutants in effluent and receiving water is required one year after the scheduled plant improvements are operational. Quarterly effluent and receiving water monitoring for total and dissolved copper and zinc, and hardness is also required.

T  
E  
N  
T  
A  
T  
I  
V  
E